

# TerraScope

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TRENDS



## Green expectations

**R**ECENT EVENTS suggest a resurgence of environmental concern wherever corporations or governments in western industrial nations fail to meet people's ingrained environmental expectations.

Abiding public support for environmental progress has been demonstrated in a number of countries in recent months. The most dramatic incident was the stunning success this summer of the Green-

peace campaign in Europe to stop Royal Dutch Shell from disposing of the obsolete oil drilling platform Brent Spar by sinking it in the North Sea.

Greenpeace employed its well-devel-

oped sense of news imagery to enlist support from a receptive public. After renting satellite time and video equipment, buccaneer-like campaigners boarded the Brent Spar, prompting Shell to turn its water cannons on them. The resulting news footage inflamed latent public environmental concern, and set the stage for the lightning victory.

In Germany, a consumer boycott reduced Shell sales by 20-30%, and spread to Denmark and Holland. Soon, the head of Shell Germany went on television to express sympathy for the Greenpeace position. Ten days after the boycott began, the international oil giant surrendered.

"With the environment movement, there's a sleeping giant that can be awakened very, very easily and very, very quickly," says campaign leader Paul Horsman, of Greenpeace U.K.

Similar public concerns can be seen at more local levels. In the U.K. this summer, anti-smog demonstrators in Greenwich

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Photo: Greenpeace

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blocked London-bound morning commuter traffic to draw attention to high levels of car-generated pollution which local parents say is harming their children's health. "Inaction by Greenwich Council" in the face of chronic air pollution exceedances prompted the "direct action" by a group called Reclaim the Streets, says Theba Islam, who organized the protest.

In the United States, signs of a revival are also apparent. And again, the resurgence has been provoked by the percep-

starting to see more and more reporting in the smaller papers on the local impacts, such as Superfund sites that won't be cleaned up," Ms. Bucciano said.

The NRDC also reports a turnaround in donations. "Unfortunately, when things are bad for the environment, things are good for environment groups," said Linda Lopez, the NRDC's director of membership.

The same phenomenon is being reported from the opposite viewpoint. Republican pollster Frank Luntz warned his clients: "Do not allow the choice to be portrayed as deregulation versus environmental quality...The public may not like or admire regulations...but puts environmental protection as a higher priority than cutting regulations." Luntz's poll last spring found opinion favouring the environment over deregulation by more than two-to-one. Other recent U.S. polls have made similar findings.

A recent poll conducted in France, Germany, Italy, Spain, the U.K. and Canada asked respondents if they agreed or disagreed with a series of statements about the environment. "The statement 'companies which pollute the environment should be sanctioned' was agreed to by the strongest majority," states the Paris-based polling organization Socioconsult. In the long-industrialized nations of France, Germany, the U.K. and Canada, "environmentalism has shifted to a norm," Socioconsult says.

Dan Rath of the Toronto-based polling firm Environics Research agrees. "Canadians have an extremely low level of tolerance for any movement away from a high level of environmental responsibility and activity by government or business," Rath says.

In this context, the environmental leadership being exhibited by politicians like European Commission Environment Commissioner Ritt Bjerregaard, U.S. President Bill Clinton, and Canadian Deputy Prime Minister and Environment Minister Sheila Copps seems to be in line with public concerns about the importance of environment for their health and their future. 

## German Green Party bounces back

**A**fter prodding Germany to adopt advanced environmental legislation, then falling out of favour with the electorate, the German Green Party has re-emerged from the political fringes. Following successes in regional elections this year in the country's most populous state, North-Rhine Westphalia, and the city state of Bremen, the Greens formed so-called "Red-Green Coalition" governments with the Social Democrats, one of the country's two major parties.

"The Greens have now acquired the role of king-maker, replacing the Free Democrats," who have played that role for decades but are now flagging, states Infas, a private German research institute.

German political observers have regarded these regional coalitions as a pilot project and are speculating on the possibility of a national Red-Green government following the 1998 federal elections.

## New boost to U.S. green industry

**T**ight budgets mean governments must find new ways to advance public policy. Faced with a budget-cutting Congress, the Clinton Administration recently launched the Rapid Commercialization Initiative (RCI), aimed at getting promising new green technologies to market.

The RCI, coordinated by the White House Interagency Environmental Technologies Office, is aimed at reducing barriers to market entry for technologies that are far along in the development process. Particular emphasis is being placed on siting technology trials, obtaining necessary permits and ensuring third party verification of technology effectiveness. The RCI will focus on technologies that prevent, monitor, control or remediate pollution.

No federal funds will be granted in the pilot phase of the program. Rather, the role of the federal government will be to build cooperative relations between regulators and proponents that help streamline the regulatory process, avoid duplication, coordinate information and get new technologies working in the field.

**"Some people thought that the elections last November reflected that the pendulum was swinging back from environmental protection, but there has been an outcry in response to moves to curtail the amount of government environmental regulation."**

-Sharon Bucciano, Senior Project Attorney, National Resources Defence Council (USA)

tion that a major institution—Congress—is failing to live up to the environmental expectations of the public.

The National Resources Defense Council (NRDC), a leading U.S. environmental lobby, reports signs of a green backlash since Republican majorities with a deregulation focus were elected to the U.S. Senate and House of Representatives in November 1994.

"Some people thought that the elections last November reflected that the pendulum was swinging back from environmental protection, but there has been an outcry in response to moves to curtail the amount of government environmental regulation," said Sharon Bucciano, senior project attorney for the NRDC.

The summer Congressional debate over proposed rollbacks of environmental regulations and cuts to the Environmental Protection Agency budget has also reignited news media interest in the environment, the NRDC says. Major news outlets such as *The New York Times* had always maintained a high level of environmental coverage, but "now we're

# Greening government procurement



**C**ANADA HAS succeeded in getting G-7 governments to speed action towards greening their operations and facilities.

Together, G-7 governments spend \$3.5 trillion a year buying goods and services. If these governments directed their combined purchasing power towards buying the most environmentally friendly goods and services, it would have a significant environmental and economic effect. While a number of G-7 governments, including Canada, have had green procurement programs in place for several years, progress has been slow.

Canada seized the opportunity to accelerate things as it prepared to host a meeting of G-7 environment ministers last spring. The meeting at Hamilton ended up producing an agreement that governments must set the pace in their nations for greening operations, including green procurement. The ministers also started down the road to public accountability by agreeing that "it is essential to have in place mechanisms to measure and report on progress."

"It was Canada's initiative," says Wendy Grieder of the U.S. Environmental Protection Agency's office of international activities, "Canada set the agenda."

Canada got the item onto the table after Environment Minister Sheila Copps "indicated that she saw greening government operations and procurement as important," says Chris Hanlon, senior advisor at Environment Canada's International Affairs Branch. In Canada it is estimated that all levels of government purchase approximately \$70 billion in goods and services per year.

Six weeks before the meeting, Canada hosted an experts meeting which exchanged information, established a common vocabulary and laid the foundation

for the subsequent Ministerial discussions.

As well, Canadian officials coordinated a team of Canadian and international experts to assemble a background paper for the meeting. The detailed communiqué issued by the Ministers at the conclusion of the Hamilton meeting builds upon a section of the backgrounder called

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"Canadian Proposals for an Agenda for Cooperation."

The Hamilton agreement built on a foundation of earlier efforts by member governments and the OECD to implement green procurement. But those earlier efforts have been perceived by informed, independent observers to have had limited success.

A December 1994 survey of environmental experts from the G-7 countries found that 68% rated their own government's performance on sustainable operations as "poor." That was the worst rating of the seven performance areas surveyed.

"One of the challenges of implementing green procurement is identifying what constitutes a green product or service," says Hanlon.

Even an act as seemingly simple as buying recycled paper can be difficult. Do you just look for the word "recycled," or do you check the actual proportion of recycled fibre, the proportion of post-consumer waste compared to mill-floor sweepings, whether it has been bleached, if it comes from a mill that is operated with acceptable water and air emissions, and if the feed stock comes from a forest that is responsibly managed?

Other green choices can be complicated too. Switching to less polluting automotive fuels might require new procurement specifications for government fleets. Constructing green government buildings would require architectural competitions to specify water and energy saving designs, and construction contracts that stipulate recycling of demolition waste and leftover building materials.

Ottawa-based consultant David Chernushenko of The Delphi Group has been commissioned by the National Round Table on Environment and Economy to ask procurement managers what criteria they are using to make green purchases, and how implementation is going.

"The response has been humbling and disappointing. What a lot of people tell us is, God, this is hard. For goodness sake, just give us a computerized manual we can use," he says.

There are no comprehensive manuals listing green product choices based on full life-cycle analysis. But two useful tools exist. The first is labelling. Its virtue is ease of use. Its downside is, at present, lack of either depth of analysis or breadth of scope.

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## G-7 Government Performance

Percent saying "poor" job



Source: December 1994 *Globescan Survey of Experts*, Synergistics, Toronto

For example, Germany's Blue Angel logo program was the first such green procurement aid, dating from 1977. Blue Angels are awarded for a single criterion, such as being more durable or less noisy than alternatives. "You look at some of these products and scratch your head. How did they ever get a logo?" Chemushenko says. The Germans are updating the program by adopting a more rigorous life-cycle analysis.

By comparison, Canada's EcoLogo program, launched in 1988, bestows the label only after life-cycle analysis. While this is more useful as a guide to green purchasing, the cost and time requirements for certifying products and services has meant a slower process for building up a substantial list of accredited products and services.

Another green procurement aid is a protocol of questions that purchasing managers can ask their suppliers. The U.K. Environment Department has developed one for internal use, and the Canadian Standards Association has begun circulating one here.

But the lack of a comprehensive, "no-brainer" green procurement tool remains the single greatest constraint to greener procurement. Broadening meaningful green labelling appears to be the way to go, Chemushenko says.

Regardless of the challenges, forward progress is apparent. The European Commission has surveyed its own operations' environmental impacts, introduced a program to divert recyclables from its buildings' waste stream, and moved to reduce overall paper use while increasing the recycled portion of its paper purchases from 19% to 80%.

Here in Canada, recent legislation bolsters existing efforts by requiring each federal department's Minister to table within 2 years a sustainable development strategy, including progress in greening operations and green procurement. At the same time, the Eco-Logo program (now operated by TerraChoice Environmental Services Inc.) is expanding the number of goods and services covered. These two developments put Canada on the leading edge, only a few years away from green procurement making a significant impact on Canadian government spending patterns. ■

# New biotech products test consumer acceptance

**S**OME OF the first agricultural biotechnology products to be commercially approved are now on the market and could provide the first indication of consumer acceptance of these controversial foods.

It appears that 1996 will be the watershed year for agricultural biotechnology (referred to as ag-biotech) companies worldwide—and for their critics who are concerned about health and environmental impacts of dozens of new products in the approvals pipeline, and about overall research directions.

For many years, the agriculture industry has worked to improve crops and livestock through selective breeding techniques. With the advent of genetic engineering, the pace and possibilities of developing new plant and animal varieties have increased exponentially. Yet, applications of genetic engineering to basic food-stuffs have proven controversial.

Some of the most common plant applications currently being developed appear to be those that have the *Bacillus thuringiensis* (Bt) gene added, creating strains of pest-resistant crops. Bt is a naturally occurring bacterium that produces a protein that is

toxic to some insects. Currently available as an agricultural pesticide, Bt is used predominantly by organic and other sustainable growers because it is most effective when employed in conjunction with other pest management techniques. When spliced into the genetic makeup of a plant, Bt becomes more effective because the plant produces the protective protein at high levels throughout the growing season.

Critics fear its widespread use could lead to the creation of Bt-tolerant insect strains, rendering both the pesticide and

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—Rebecca Goldburg,  
The Environmental  
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**"The herbicides to be used with the resistant crops have lower environmental and toxicological impact than the traditional selective herbicides..."**

—Dr. Ken Pallett,  
Rhône-Poulenc Agriculture



Bt-implanted crop varieties useless. The industry is aware of this potential problem, says Margaret Mellon, of the Union of Concerned Scientists in the U.S., but "they optimistically hope that once resistance is developed to Bt toxins, a new strain of biopesticide or its equivalent will be discovered to take its place. The greatest harm will be done to organic farmers who will lose a very valuable tool once the Bt crops render the natural spray ineffective."

Gary Barton of Monsanto Inc. concurs that the development of pest tolerance is a serious concern, but says "it can be addressed with resistance maintenance plans and the development of new biopesticides, such as the recently announced discovery of the new biopesticide, cholesterol oxidase, a possible substitute for Bt."

#### Herbicide-resistant plants

Also controversial is research creating herbicide-resistant plants. The development of these plant varieties, especially by the manufacturers of the same herbicides to which the new crops are being made resistant, has raised questions about what is

motivating the research. "Agricultural biotechnology is clearly being used to entrench, not reduce, reliance on chemical herbicides," says Rebecca Goldburg, a biologist with the U.S. non-governmental group, the Environmental Defense Fund.

"The development of herbicide-resistant plants will not end the use of chemical weed control, but they will change the types of herbicides used," counters Dr. Ken Pallett, a scientist with Rhône-Poulenc Agriculture in Britain, whose company is developing varieties resistant to the broad-leaf herbicide bromoxynil. "The herbicides to be used with the resistant crops have lower environmental and toxicological impact than the traditional selective herbicides used in these crops, which often are applied at very high dose rates. This is particularly true with the herbicides for which resistant crops are being developed. In addition, resistant crops will offer the farmer a choice and flexibility in his control of weeds."

Public concern has generally focused on the fear of unknown risks associated with developing new species and introducing them into complex ecosystems, as well as

on yet-to-be-discovered negative impacts that the products themselves might have on humans and the environment. Although these concerns will persist, a more fundamental critique of ag-biotech may be emerging that questions the very desirability of the kind of research being conducted.

#### Fundamental objection

Mark Winfield, Research Director for the Canadian Institute for Environmental Law and Policy, questions the value of much of the applied research being conducted because "it is directed at fixing problems that are poorly defined or do not exist." For instance, he asks, "What problem does the bovine growth hormone (Bovine Somatotropin or Bst) seek to address? Is there a shortage of milk? Are there too many dairy farmers working to justify putting many, especially the smaller producers, out of business?"

In Winfield's view, the main impulse driving the research is the corporate desire to increase large scale and unsustainable mono-culture farming practices. "The emerging applications in agricultural biotechnology seem more likely to continue and expand these practices, than to move agriculture in an environmentally sustainable direction," he says.

That view is mirrored by European environmentalists, including Henk Hobbelink of Genetic Resources Action International (GRAIN) in Barcelona who says that "it is not a question of whether biotechnology is good or bad, but rather whether the solutions being advanced promote sustainable agricultural practices.

"Milk production may not be a problem in North America right now," says Gary Barton of Monsanto, the manufacturer of Bst. "It is, however, a problem world-wide, and ag-biotech products, such as Bst, will be key to insuring efficient production and a sufficient supply of food in the next century."

Although the sales of ag-biotech products are projected by industry analysts to increase dramatically from the current tens of millions to billions of dollars over the next five years, the actual marketing of these products has only just begun. The ultimate test—consumer acceptance—is yet to come.



Now undergoing in-service testing: 40-seat, zero-emission transit bus powered by a 275 horsepower Ballard fuel cell engine.



## Fuel cells power Canadian firm's success

**U**SING TECHNOLOGY invented more than 150 years ago, a British Columbia company has achieved international recognition as the industry leader in an environmentally friendly technology that could revolutionize transportation and power generation over the next ten years.

Ballard Power Systems Inc. of Vancouver has developed an efficient fuel cell that is attracting investment and interest from automotive and other manufacturers from around the world.

Fuel cells, like batteries, provide electrical power. But rather than storing electricity, they convert hydrogen to electricity as needed. Hydrogen is abundantly available from water, and from hydrocarbons such as methane, propane and methanol. The only by-products of the fuel cells are heat and water, effectively providing zero emission, although greenhouse gases, such as carbon dioxide, are released in the production of the hydrogen, if hydrocarbon fuels are used.

"Ballard is leading the way in this technology right now," says Bob Kost, an official in the U.S. Department of Energy's transportation fuel cell R&D program. "We see them as the target to catch up with."

Established in 1979 by Geoffrey Ballard, Paul Howard, and Keith Prater as a con-

tract engineering firm for emerging battery technology, Ballard decided to get out of the battery business to concentrate efforts on the development of promising fuel cell technology. In transportation circles, battery technology is being seen by many as a stop-gap measure until fuel cell technology can be commercialized.

Ballard's success is based on the proton exchange membrane (PEM). Fuel cells and batteries require an electrolyte, typically either an acid or base liquid, to create electrical energy. The PEM fuel cell uses a non-liquid polymer membrane as its electrolyte, making it particularly suitable for transportation purposes. It has the added advantage of a lower weight-to-power ratio than liquid electrolyte fuel cells, which is an advantage for transportation uses.

### Commercial targets

Ballard is pursuing two commercialization projects: a zero-emission transit bus, and a 250-kilowatt power plant that could generate enough electricity for a

small manufacturing plant or an office building.

The company unveiled a 20-seat transit bus prototype powered by a fuel cell in March 1993 and has now developed a 40-seat model for in-service testing. Both of these projects have received support from Natural Resources Canada and the Government of British Columbia. The Chicago Transit Authority committed to a demonstration of three of these buses in September 1995 at a reported total project cost of US \$8 million. Commercialization is scheduled for 1998, at a price competitive with the costs of trolley buses (around CDN \$550,000 each).

In April 1994, Daimler-Benz AG, the German automobile maker, unveiled a Mercedes-Benz mini-van powered by the Ballard fuel cell. Daimler has committed some \$25 million to Ballard for the commercialization of passenger vehicles powered by fuel cells. Ballard also has technology agreements with other car makers, including General Motors, Nissan and Mitsubishi.

The fuel cell is also being adopted for submarine propulsion. "Fuel cells have great promise in this field because of a very low heat and noise signature, and endurance characteristics that are competitive with nuclear power, at a fraction of the cost," says Ballard Vice President Mossadig Umeddy.

The Canadian government committed \$3.7 million in June 1994 for a 40 kw working prototype of a 400 kw power plant it would like to put into submarines. German submarine manufacturer Howaldtswerke awarded a \$9.3 million contract to Ballard in July 1994 to assist with the development of a fuel-cell propulsion system. It had already tested a submarine with a competitor's fuel cell, but has now switched to Ballard technology.

Ballard still has to overcome a number of challenges in order to secure its future. Maintaining a strong patent position is one of them; after all, its technology is its strategic advantage. The company will also have to lower production costs and refine its manufacturing processes in order to successfully commercialize this technology. But, given the excitement surrounding Ballard's success to date, the future looks promising.

# The little country that could

**A**SK INTERNATIONAL experts to identify the global leader in sustainable development, and many point to the Netherlands.

Holland's comprehensive National Environmental Policy Plan was passed by the national parliament in 1989. It set out goals that were more ambitious than those of most other countries, including: a stabilization target for greenhouse gases at 1990 levels by the year 2000, tough emission ceilings for acid rain precursors, aggressive energy conservation measures, and strict requirements for toxic emission reduction.

## Unique approach

But aggressive goals were only part of their approach. The legislation also redefined the roles of public and private sector organizations, making companies rather than government responsible for environmental management. New tools, called covenants, are helping the private sector meet the government-set environmental targets. Covenants are agreements between industry and the national government specifying certain actions to reduce emissions. Industry was drawn to the table through a combination of goodwill and historical cooperation with government, backed by the threat of mandatory requirements.

The first covenants grew from an "incident" approach and focused on specific pollutants or products such as batteries. More recent covenants reflect an "integrated" approach and require specific emissions reductions within time frames of 5 to 25 years, using 1985 as the base year. In a bid to increase accountability, more recent covenants have been signed by all participants, including three levels of Dutch government (national, provincial and municipal), individual companies and industrial associations.

Non-governmental organizations are not



at the negotiating table, and only see a final version of the agreement. Some covenants have been presented to Parliament for discussion, but changes at this late stage are rare. A total of one hundred covenants now cover a whole range of emission types, and promote energy efficiency as well. The more recent covenants require an environmental business plan to be created for each industrial plant operating under the covenant, to translate industry-wide target reductions into facility-specific actions.

## Mixed results

With an estimated 90 per cent of all industrial pollution in the Netherlands soon to be covered by a covenant, are the promised emission reductions actually being delivered? Yes and no. A recent government evaluation comparing the emissions from the base metal industry under the existing covenant to those

anticipated through regulation, concluded that covenants had succeeded in reducing emissions into the atmosphere better than would have been achieved by regulation. However, the opposite was true for emissions into water, with more pollution taking place under covenants than would have been permitted under regulation.

The independent Facilitaire Organisatie Industrie, an arms-length agency charged with collecting and analyzing industrial data submitted under the covenants, found that some industries such as chemical manufacturers are on target to meet approximately 80-90% of their covenant goals, while others such as base metals manufacturers may only meet about 50-60% of their covenant goals. In its publicly available annual reports, the agency also notes wide performance variation within industrial sectors.

Given these mixed results, not everyone in Holland is satisfied with the covenant approach. "Industry is willing to sign covenants, but what they are willing to do is another thing," according to Jan Willem Biekart, of The Netherlands Society for Nature and Environment (Stichting Natuur en Milieu). "In virtually all cases known to me, additional regulation has been a key factor for success of a covenant. Where this is not the case,

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The Netherlands has risen to its unique challenges of high population density, intensive use of land, and location at the delta of three heavily used rivers, to meet the expectations of its environmentally concerned citizens with a set of ambitious national goals and a unique partnership approach to implementation.

most covenants fail." He also identifies the lack of independent verification of industrial emission data, the lack of public input and the difficulty of evaluating success as major drawbacks of the covenant approach. However, he would follow the covenant path again, but this time set "a lot of boundary conditions" such as greater public scrutiny.

"It is a common misunderstanding that covenants are superior to regulation," states Marc Wesselink, a Dutch environmental consultant working for ERM. "Really they are an additional tool to regulation, and then they are a good one because they encourage mutual understanding of the need to reduce emissions and the difficulties in doing so, between government and industry. If industry thinks for themselves how to achieve a

reduction, then we have taken the first step towards sustainable development," he says.

While many other countries including the United States and Canada have negotiated agreements with industry for environmental gains, very few have reached the scope, detail and public accountability of covenants in the Netherlands. In Canada, the ARET program (Accelerated Reduction and Elimination of Toxics), through which over 100 companies have voluntarily pledged pollution reductions, is perhaps the closest example.

In the current North American context, where new roles and approaches to environmental progress are being evaluated, the Dutch approach to goal-setting and industry covenants may offer important lessons. ☺

**Ambitious goals.** Holland's National Environmental Policy Plan calls for:

- a stabilization target for greenhouse gases at 1990 levels by the year 2000
- tough emission ceilings for acid rain precursors
- aggressive energy conservation measures
- strict toxic emission reduction requirements

**TerraScope** provides Canadian decision-makers with timely news and analysis of international environmental affairs. It is produced quarterly for the International Affairs Branch of Environment Canada by Synergistics Consulting, Toronto. The views expressed do not necessarily represent those of Environment Canada or the Government of Canada.

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